Dynamic Chiropractic

SOFT TISSUE / TRIGGER POINTS

Statistical Algometry: Trigger Points with Measurable Certainty

Introduction

Travell and Simons[1] define the myofascial trigger point as:

> A hyperirritable spot, usually within a taut band of skeletal muscle or in a muscle's fascia, that is painful on compression and that can give rise to characteristic referred pain, tenderness, and autonomic phenomena.

Such hyperirritable spots can be found by first locating a taut band of muscle tissue. Flat or snapping palpation across the long axis of the muscle being examined is a quick and clinically efficient way to locate these taut bands. After locating a questionably taut band of skeletal muscle, compressive palpation along the length of the band may reveal a point that is exquisitely tender. This "exquisitely tender" point may be the trigger point in question.

Clinicians have begun using a simple, hand-held force guage that is fitted with a rubber tip to measure trigger point activity. This device is called an algometer, dolormeter or pressure threshold meter by various authors. The algometer's rubber tip is placed over and pressed into the trigger point until the patient "perceives" the initial pressure change to a distinct sensation of pain. The algometer is then read to determine the pressure that produced the sensation of pain.

Fischer[2] has set algometric guidelines for diagnosing trigger points. Of critical importance is the two kilogram rule. This rule, loosely stated, says that a trigger point is identified if there exists a two kg difference between it and its contralateral counterpart. Restated with example, the tender spot in the right deltoid is only a trigger point if the left deltoid's exact corresponding spot (the right side's mirror image) is less sensitive to pressure by two kgs. The trick is to find that mirror image. By his own admission Fischer states that a few millimeters away from any trigger point can result in readings that vary by several kilograms.

It is clear that algometry is a powerful tool in diagnosing and documenting painful phenomena like trigger points. However the current methods and protocols used do not adequately control for errors introduced during the employment of Fischer's two kg rule. My research has allowed me to remove this error by drawing on the statistical tools of quality control engineers.

Materials and Methods

Using a simple hand-held algometer fitted with a 1 cm #2 rubber tip, I enlisted the assistance of a patient who recently began having pain in his right lateral thigh while training for the New York City Marathon. After examining to rule out orthopedic and neurologic pathologies of the lumbar spine, hip, thigh, and knee, I located a tender band of tissue in his right vastus lateralis muscle. This band ran

approximately 19 cm along the long axis of the muscle.

Using an algometer, I systematically began taking algometric measurements from inferior to superior directly over the taut band. Since the length of tissue under study was 19 cm long, I was able to make 19 successive, linear measurements. This allowed me to locate the point that caused pain with the smallest amount of pressure.

The 12th linear algometric reading, approximately mid-vastus, demonstrated a dramatically lowered threshold for pain. I took 10 additional readings that surrounded the linear algometric readings number 10 through 14. These readings can be found in Table 1.

Table 1

Sample Number	(A)	(B)	(C)
1	*	7.3	*
2	*	6.5	*
3	*	6.7	*
4	*	6.9	*
5	*	6.5	*
6	*	5.5	*
7	*	5.9	*
8	*	5.5	*
9	*	5.5	*
10	4.9	4.9	4.5
11	4.1	3.9	4.1
12	3.8	1.6	3.2
13	4.1	4.2	3.9
14	5.6	5.1	5.4
15	*	5.2	*
16	*	6.5	*
17	*	6.9	*
18	*	7.3	*
19	*	8	*
(A) = tissue immediately anterior to taut band			
(B) = taut band			
(C) = tissue immediately posterior to taut band			

Results

Linear algometric point number 12 was statistically compared to the 14 algometric points clustered

around it using a single sample t-test. The single sample t-test performed on these data resulted in a highly significant difference between the single point believed to be the trigger point and those points clustered around it ($t=15,4$, $df=13$, $p<0.001$).

Note that points 1-9 and 15-19 were not included in these calculations. These points only served to localize the point of lowest threshold, i.e., linear algometric point 12.

Discussion

This method of locating and definitively identifying a trigger point allows the clinician to possess a measurable level of certainty to his/her assertion that there exists "something" out of the ordinary. In this case it was a trigger point in the middle region of the right vastus lateralis muscle. It could very easily have been a subluxated vertebra which are commonly painful upon palpation.

This scenario, when applied to the vertebral column, can assist the chiropractor in identifying a painful vertebral subluxation with measurable certainty previously unknown. This can be a tremendous boon for the practice of documentable chiropractic care in an age when a "prove or perish" ethic is gaining momentum.

Currently, I'm engaged in research and development of a small, portable electronic algometer that will quickly sample and calculate these statistics. This device will provide the doctor with immediate, hard documentation for patient records. This is the kind of tool that can keep chiropractic in the forefront of health care in this and future centuries.

Conclusion

Chiropractic is at a point where the right kind of tools for documentation are a sine qua non. When a tool such as the algometer has an immediate in-office statistical application that will give the daily work of chiropractors measurable certainty, then it is imperative to take notice.

Anyone interested in collecting additional information in statistical application of algometry should feel free to contact Dr. Bonci at P.O. Box 120, Tuckahoe, NY 10707-0120 or via e-mail on CompuServe at 73664, 2625 or on the Internet at ABONCI@IDS.NET.

References

1. Travell JG and Simons DG. Myofascial Pain and Dysfunction: The Trigger Point Manual. Baltimore: Williams & Wilkins, 1983.

2. Fischer AA. Pressure threshold meter: Its use for quantifications of tender spots. Arch Phys Med Rehabil 1986; 67: 836-838.

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